

The opinion in support of the decision being entered today was **not** written for publication and is **not** binding precedent of the Board.

Paper No. 31

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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**Ex parte** BARBARA A. HALL, JOHN A. MURDOCK,  
AGNES Y. NGAI and EDWARD F. WESTERMAN

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Appeal No. 2003-2092  
Application 09/046,285

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ON BRIEF

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Before KRASS, FLEMING, and GROSS, **Administrative Patent Judges.**

FLEMING, **Administrative Patent Judge.**

**DECISION ON APPEAL**

This is a decision on appeal from the final rejection of claims 1 through 3, 5 through 8 and 10 through 14, all the claims pending in the instant application. Claims 4 and 9 have been canceled.

**Invention**

The invention relates to methods and systems using MPEG standards for compressing digital video data. See page 1 of

Appellants' specification. The figure is a block diagram of an MPEG encoder. See page 6 of Appellants' specification. With prior art MPEG encoders, each 8 x 8 block of coefficients is encoded by the VLE unit 34 and sent to the compressed output interface as part of the encoded bitstream. Each encoded coefficient is variable in length. The variable-length code is selected based on the value of a given quantized DCT coefficient and its distance from the previous non-zero coefficient in the block as determined by a predefined block scanning order. Therefore, the actual encoded size of an 8 x 8 block, in terms of number of bits, is unknown until after each coefficient's variable-length code has been determined within the VLE unit. See pages 8 and 9 of Appellants' specification. In accordance with Appellants' invention, a digital video picture is encoded to an exact size by calculating and setting a bit limit per block in the VLE unit 34. As represented by block 50, the VLE unit 34 accumulates a sum of the total number of bits per block while receiving the quantized DCT coefficient as input and outputting of the variable length code. The VLE unit represented by block 52 compares the accumulated number of used bits with the block limit value set by the microcode, and the VLE terminates its output of variable-length code for a given block when the

accumulated number of the bits reaches the limit. See page 9 of Appellants' specification. The VLE unit then discards the remaining coefficients of the block and finishes its encoding of the block by outputting an end of block code. See page 10 of Appellants' specification.

Independent claim 1, present in the application, is representative of Appellants' claimed invention and is reproduced as follows:

1. A method for encoding digital video picture data, comprising the steps of:

partitioning the video picture data into a group of blocks;

quantizing the video picture data;

selecting at least some of the blocks, one block at a time;

encoding each of the selected blocks in a variable length encoder to form encoded coefficients having varying numbers of bits;

for each of the selected blocks, and in a given sequence of the selected blocks,

i) transmitting quantized data for the block to the encoder,

ii) outputting from the variable length encoder the varying bit coefficients encoded from the block,

iii) accumulating a sum of the number of bits in the varying bit coefficients output from the encoder,

iv) comparing said sum to a predefined block limit value,

v) terminating the outputting of the varying bit coefficients encoded from the block to prevent the accumulated sum from exceeding the predefined block limit value, and

vi) if all of the coefficients encoded from the block are outputted, and the accumulated sum is less than the predefined block limit value, then increasing the block limit value to allow an increased number of bits to be outputted when the encoded coefficients from the next block in the given sequence are outputted.

### **References**

The references relied on by the Examiner are as follows:

Zdepski et al. (Zdepski)	5,089,888	Feb. 18, 1992
Tsukagoshi	5,198,900	Mar. 30, 1993

### **Rejection at Issue**

Claims 1 through 3, 5 through 8 and 10 through 14 stand rejected under 35 U.S.C. § 103 as being unpatentable over Zdepski in view of Tsukagoshi.

Throughout our opinion, we will make reference to the briefs<sup>1</sup> and the answer for the respective details thereof.

### **OPINION**

With full consideration being given to the subject matter on appeal, the Examiner's rejection and the arguments of Appellants

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<sup>1</sup>Appellants filed an appeal brief on January 17, 2003. Appellants filed a reply brief on July 11, 2003. The Examiner mailed an office communication on July 23, 2003, stating that the reply brief has been entered into the record.

and Examiner for reason stated **infra**, we reverse the Examiner's rejection of claims 1 through 3, 5 through 8 and 10 through 14 under 35 U.S.C. § 103.

In rejecting claims under 35 U.S.C. § 103, the Examiner bears the initial burden of establishing a **prima facie** case of obviousness. **In re Oetiker**, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992). **See also In re Piasecki**, 745 F.2d 1468, 1472, 223 USPQ 785, 788 (Fed. Cir. 1984). The Examiner can satisfy this burden by showing that some objective teaching in the prior art or knowledge generally available to one of ordinary skill in the art suggests the claimed subject matter.

**In re Fine**, 837 F.2d 1071, 1074, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). Only if this initial burden is met does the burden of coming forward with evidence or argument shift to the Appellants. **Oetiker**, 977 F.2d at 1445, 24 USPQ2d at 1444. **See also Piasecki**, 745 F.2d at 1472, 223 USPQ at 788.

An obviousness analysis commences with a review and consideration of all the pertinent evidence and arguments. "In reviewing the [E]xaminer's decision on appeal, the Board must necessarily weigh all of the evidence and argument." **Oetiker**, 977 F.2d at 1445, 24 USPQ2d at 1444. "[T]he Board must not only

assure that the requisite findings are made, based on evidence of record, but must also explain the reasoning by which the findings are deemed to support the agency's conclusion." **In re Lee**, 277 F.3d 1338, 1344, 61 USPQ2d 1430, 1434 (Fed. Cir. 2002). With these principles in mind, we commence review of the pertinent evidence and arguments of Appellants and Examiner.

Appellants argue that Zdepski and Tsukagoshi fail to disclose or suggest for each of at least some of the video blocks, accumulating a sum of the number of bits in the varying bits coefficients encoded from the block and output from the encoder, comparing the sum to a predefined block limit value and terminating the outputting of the varying bit coefficients encoded from the block to prevent the accumulated sum from exceeding the predefined block limit as recited in Appellants' independent claims 1 and 6. See page 4 of Appellants' brief and reply brief. The Examiner states that these limitations are found in Zdepski in column 7, lines 7 through 12. See pages 4 and 5 of the Examiner's answer.

We note that Appellants' claim 1 recites:

A method for encoding digital video picture data, comprising the steps of: . . . terminating the outputting of the varying bit coefficients encoded from the block to prevent the accumulated sum from exceeding the predefined block limit value, and if all of the coefficients encoded

from the block are outputted, and the accumulated sum is less than the predefined block limit value, then increasing the block limit value to allow an increased number of bits to be outputted when the encoded coefficients from the next block in the given sequence are outputted.

We note that Appellants' independent claim 6 recites:

means for controlling the outputting of the encoded coefficients, wherein, for the outputted coefficients encoded from each block, the controlling means i) accumulates a sum of the number of bits in the outputted encoded varying bit coefficients, ii) compares said sum to a predefined block limit value, iii) terminates the outputting of the encoded varying bit coefficients to prevent the accumulated sum from exceeding the predefined block limit value, and iv) if all of the coefficients encoded from the block are outputted, and the accumulated sum is less than the predefined block limit value, then increasing the block limit value to allow an increased number of bits to be outputted when the coefficient encoded from the next block in the given sequence are outputted.

Therefore, we find that all the claims before us recite for each of the selected blocks, accumulating a sum of the number of bits in varying bit coefficients encoded from the block and output from the encoder, comparing the sum to a predefined block limit value and determining the output of the varying bit coefficient encoded from the block to prevent the accumulated sum from exceeding the predefined block limit value.

Upon our review of Zdepski, we agree with the Examiner that the quantizer 14, the encoder 17, the transmission buffer 19, and the quantizer controller 31 form a closed-loop control circuit

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which serves to maintain the amount of number of bits of codes in the transmission buffer 19 at or below a desired quantity. See Zdepski, column 7, lines 1 through 12. However, we fail to find that the Examiner has made a **prima facie** case to show that Zdepski teaches the Appellants' claimed method and apparatus for controlling the numbers of bits outputted from the encoder in the precise way as recited in claims 1 and 6.

In view of the foregoing, we have not sustained the Examiner's rejection of claims 1 through 3, 5 through 8 and 10 through 14 under 35 U.S.C. § 103 as being unpatentable over Zdepski in view of Tsukagoshi.

**REVERSED**

ERROL A. KRASS	)	
Administrative Patent Judge	)	
	)	
	)	
	)	BOARD OF PATENT
MICHAEL R. FLEMING	)	
Administrative Patent Judge	)	APPEALS AND
	)	
	)	INTERFERENCES
	)	
ANITA PELLMAN GROSS	)	
Administrative Patent Judge	)	

MRF:pgc



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